



## Importance of detailed meteorological information for smart city development

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## Importance of detailed meteorological information for smart city development

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Smart cities rely on the development and implementation of Key Performance Indicators to help drive decision making. Many of these indicators rely on atmospheric data as an input. For example, buildings depend on air temperature and solar radiation to determine heating or cooling needs, and flood control systems need accurate precipitation information.

Additionally, renewable energy production is dependent on weather. Therefore, high resolution modeling can be used to investigate the strategic planning of urban energy networks, and provide advanced forecasting of distributed power plant production. Climatological studies can aid in identifying extreme conditions that fall outside of the range of normal variance, but have significant impact on the cities operation.

The meteorological section of DTU wind energy is the only meteorological section at DTU and has a wide range of competencies in mapping and forecasting atmospheric conditions.

Urban meteorology focuses broadly on two areas.

1. The description of atmospheric variation inside of urban areas through the study of the urban boundary layer and the urban heat island effect. The figure shows how temperature can vary across a city.

2. The influence of urbanization on larger circulations and the climate system, such as changes in precipitation patterns.

Standard meteorological forecasts do not resolve these impacts at high detail. Therefore, localized microscale studies can provide decision makers with additional information to better run a smart city.

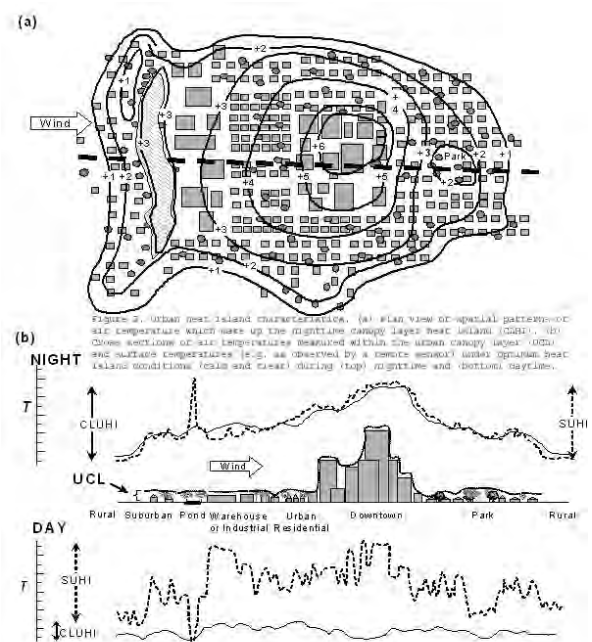


Illustration 1: From <http://actionbioscience.org/environment/voigt.html>